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ECOLOGICAL ASSESSMENT OF EPBC ACT CONTROLLED ACTION SPECIES AND COMMUNITIES FOR THE OAKDALE WEST ESTATE STATE SIGNIFICANT DEVELOPMENT

Dear Guy,

The purpose of this letter is to provide an addendum ecological assessment of Matters of National Environmental Significance (MNES) as listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for the Oakdale West State Significant Development (SSD).

As you are aware the Oakdale West SSD was referred to the Commonwealth Department of the Environment and Energy (DoEE) and was declared a "controlled action" on 31 August 2017 due to the likelihood of significant impact on EPBC Act listed threatened species and communities.

Further assessment of the Oakdale West SSD under the EPBC Act is to be conducted in accordance with the NSW Assessment Bilateral Agreement 2015. This agreement allows the use of documents prepared as part of the State approval process to be utilised. The previous ecological documents prepared for the State approval process were undertaken in accordance with the NSW Framework for Biodiversity Assessment (FBA), and includes a Biodiversity Assessment Report (BAR) and the Biodiversity Offset Strategy (BOS).

DoEE has issued the requirements for preparing the documentation relevant to the assessment of the Oakdale West SSD. These requirements have largely been addressed within the BAR and BOS. However, some additional information, as well as additional assessments for the five 'controlled action' MNES species/communities are required to fulfil the assessment requirements under the EPBC Act.

Appendix A to this letter outlines how the BAR and BOS address the requirements issued by DoEE and provide additional information where required. **Appendix B** to this letter provides an additional assessment of five MNES which were not specifically addressed within the BAR and BOS. **Appendix C** contains figures showing the locations of native vegetation and MNES while **Appendix D** contains the summary of Goodman's environmental record as outlined in the referral.

If you have any queries or would like to discuss any aspects of this assessment, please do not hesitate to contact me, or David Robertson, on 9868 1933.

Yours sincerely

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Appendix A

Consistency of Ecological Documents prepared under FBA (BAR and BOS) with Ecological documentation required under EPBC Act for MNES

Table 1 Consistency of FBA documentation with EPBC Act requirements

Commonwealth Supplementary Assessment Requirement	Relevant Section of FBA documentation (BAR = Biodiversity Assessment Report; BOS = Biodiversity Offset Strategy)
General Requirements	
Project Description	
4. The title of the action, background to the development and current status.	BAR: Chapter 1 opening paragraph; Section 1.2
5. The precise location and description of all works to be undertaken (including associated offsite works and infrastructure), structures to be built or elements of the action that may have impacts on matters of national environmental significance (MNES).	BAR: Section 1.2; Figure 1.3. Elements of the action that have impacts on MNES include removal of vegetation/fauna habitat within the development Site
6. How the action relates to any other actions that have been, or are being taken, in the region affected by the action.	BAR: Section 1.2.2
7. How the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts on MNES.	BAR: Section 1.2.2, Section 1.2.3, Figure 1.3
Impacts	
8. The EIS must include an assessment of the relevant impacts of the action on threatened species and communities; including - a description and detailed assessment of the nature and extent of the likely direct, indirect and consequential impacts, including short term and long term relevant impacts; - a statement whether any relevant impacts are likely to be known, unpredictable or irreversible; analysis of the significance of the relevant impacts - any technical data and other information used or needed to make a detailed assessment of the relevant impacts; and - a comparative description of the impacts of alternatives, if any, on the threatened species and communities.	The impact of the action on MNES is limited to clearing of the threatened ecological community Cumberland Plain Woodland and Shale-Gravel Transition Forest. This community, as listed under the EPBC Act, comprises parts of two Plant Community Types (PCTs) as described in the BAR, namely HN528 and HN529. The justification for the selection of these two PCTs is provided in Table 4.2 of the BAR. Section 4.5.2, Table 4.5 and Table 4.6 of the BAR provide an assessment of

Table 1 Consistency of FBA documentation with EPBC Act requirements

Commonwealth Supplementary Assessment Requirement	Relevant Section of FBA documentation (BAR = Biodiversity Assessment Report; BOS = Biodiversity Offset Strategy)
	the components of HN528 and HN529 that conform to the threatened community as listed under the EPBC Act. Section 4.5.3 ii) and iii) provide descriptions of the two variants of the community within the development footprint Further information and assessment on Cumberland Plain Woodland and Shale-Gravel Transition Forest and other MNES species is provided in Appendix B to this letter Documentation, databases and other information utilised for the FBA assessments are provided in Section 1.4 and the Reference section of the BAR. Additional references for MNES assessments are provided in Appendix B.
Avoidance, mitigation and offsetting	
9. For each of the relevant matters protected that are likely to be significantly impacted by the development, the EIS must provide information on proposed avoidance and mitigation measures to deal with the relevant impacts of the action, including: - a description and an assessment of the expected or predicted effectiveness of the mitigation measures; - any statutory policy basis for the mitigation measures; - the cost of the mitigation measures - a description of the outcomes that the avoidance and mitigation measures will achieve;	Ecological assessments have determined that significant impacts of the development on MNES are limited to impacts on the threatened ecological community Cumberland Plain Woodland and Shale-Gravel Transition Forest (CPW). Avoidance and mitigation measures to reduce impacts on

Table 1 Consistency of FBA documentation with EPBC Act requirements

Commonwealth Supplementary Assessment Requirement	Relevant Section of FBA documentation (BAR = Biodiversity Assessment Report; BOS = Biodiversity Offset Strategy)
- an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action; - the name of any agency responsible for endorsing or approving a mitigation measure or monitoring program; - a description of the offsets proposed to address the residual adverse significant impacts and how these offsets will be established	native flora and fauna, including threatened species and communities is outlined in Sections 6.1 - 6.2 of the BAR. Detailed Environmental Management Plans for construction and operational phases will be prepared following approval of the proposal and will specifically addresses all consent condition matters issued by the NSW Department of Planning and Environment (DPE). These management plans will include the overarching framework for continuing management, mitigation and monitoring programs and costings relating to these management actions. The final management plans will be approved by NSW DPE The residual adverse impacts on CPW are proposed to be offset by securing an offset site adjacent to the development site under a Biobanking Agreement. In accordance with the FBA, the Biobank site application will include the requisite Management Action Plan (MAP) and Total Fund Deposit (TFD) which will detail the management actions within the Biobank Site and the costings for those management actions. The final Biobank site application will be approved by the NSW

Table 1 Consistency of FBA documentation with EPBC Act requirements

Commonwealth Supplementary Assessment Requirement	Relevant Section of FBA documentation (BAR = Biodiversity Assessment Report; BOS = Biodiversity Offset Strategy)
	Office of Environment and Heritage (OEH).
10. Where a significant residual adverse impact to a threatened species or community is considered likely, the EIS must provide information on the proposed offset strategy, including discussion of the conservation benefit associated with the proposed offset strategy. Paragraphs 13 & 14 provide further requirements in relation to offsets	The proposed offset site fully meetings the offset credit requirements for HN528 and HN529. Details of the offset site and credits generated are provided in Chapter 4 of the BOS.
Key Issues - Biodiversity	
11. The EIS must address the following issues in relation to Biodiversity including separate: - identification of each EPBC Act listed threatened species and community likely to be impacted by the development. Provide evidence why other EPBC Act listed threatened species and communities likely to be located in the project area or in the vicinity will not be impacted	Section 4.5.2, Table 4.5 and Table 4.6 of the BAR for CPW. Assessments for other EPBC listed threatened species and communities are provided in Appendix B to this letter. These assessments have determined that, apart from CPW, no threatened species or communities are likely to be impacted.
12. For each of the relevant EPBC Act listed threatened species and communities likely to be impacted by the development the EIS must provide a separate: - description of the habitat and habits (including identification and mapping of suitable breeding habitat, suitable foraging habitat, important populations and habitat critical for survival), with consideration of, and reference to, any relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plans, threat abatement plans and wildlife conservation plans; and - details of the scope, timing and methodology for studies or surveys used and how they are consistent with (or	Only one MNES is considered to be impacted by the development, namely CPW. Detailed information about this community within the development footprint is contained within Section 4.5.2, Table 4.5 and Table 4.6 and Section 4.5.3 ii) and iii) of the BAR. Additional details for CPW are provided in Appendix B to this letter.

Table 1 Consistency of FBA documentation with EPBC Act requirements

Commonwealth Supplementary Assessment Requirement	Relevant Section of FBA documentation (BAR = Biodiversity Assessment Report; BOS = Biodiversity Offset Strategy)
justification for divergence from) published Australian Government guidelines and policy statements - description of the impacts of the action having regard to the full national extent of the species or community's range	
13. For each of the relevant EPBC Act listed threatened species and communities likely to be significantly impacted by the development the EIS must provide a separate: - identification of significant residual adverse impacts likely to occur after the proposed activities to avoid and mitigate all impacts are taken into account. - details of how the current published NSW Framework for Biodiversity Assessment (FBA) has been applied in accordance with the objects of the EPBC Act to offset significant residual adverse impacts; - details of the offset package to compensate for significant residual impacts including details of the credit profiles required to offset the development in accordance with the FBA and/or mapping and descriptions of the extent and condition of the relevant habitat and/or threatened communities occurring on proposed offset sites. [Note: For the purposes of approval under the EPBC Act, it is a requirement that offsets directly contribute to the ongoing viability of the specific protected matter impacted by a proposed action i.e. 'like for like'. In applying the FBA, residual impacts on EPBC Act listed threatened ecological communities must be offset with Plant Community Type(s) (PCT) that are ascribed to the specific EPBC listed ecological community. PCTs from a different vegetation class will not generally be acceptable as offsets for EPBC listed communities.]	Avoidance and mitigation measures to reduce impacts on native flora and fauna, including threatened species and communities is outlined in Sections 6.1 - 6.2 of the BAR. This includes measures to maximise avoidance of removal of native vegetation, including CPW. Residual adverse impacts on CPW after avoidance and mitigation measures are taken into account is provided in Section 6.3 of the BAR. The details of the offset measures to compensate for the significant residual impacts on CPW is provided in Chapter 4 of the BOS. No significant residual impacts are likely on other EPBC listed threatened species/communities - see addendum EPBC assessment in Appendix B to this letter.
14. Any significant residual impacts not addressed by the FBA may need to be addressed in accordance with the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offset Policy. http://www.environment.gov.au/epbc/publications/epbc-act- environmental-offsets-policy. [Note if the EPBC Act Environmental Offset Policy is used to calculate proposed offsets for a threatened species or community you may	All significant residual impacts to CPW are fully addressed in accordance with the FBA.

Table 1 Consistency of FBA documentation with EPBC Act requirements

Commonwealth Supplementary Assessment Requirement	Relevant Section of FBA documentation (BAR = Biodiversity Assessment Report; BOS = Biodiversity Offset Strategy)
wish to seek further advice from the Department of Planning and Environment.]	
15. For each threatened species and community likely to be significantly impacted by the development, the EIS must provide reference to, and consideration of, relevant approved conservation advice or recovery plan for the species or community	There is no adopted or made recovery plan for CPW under the EPBC Act. However the CPW community, as listed under state legislation is listed as one of several ecological communities addressed in the Approved Cumberland Plain Recovery Plan (DECCW, 2011) As outlined in Section 3.1.6, parts of the Cumberland Conservation Corridor occur to the north of the development site. The Cumberland Conservation Corridor links Priority Conservation Sites identified within the Approved Cumberland Plain Recovery Plan. No Priority Conservation Sites occur within or immediately adjacent to the development site.
Environmental Record of person proposing to take the action	
16. Information in relation to the environmental record of a person proposing to take action must include details as prescribed in Schedule 4 Clause 6 of the EPBC Regulations 2000.	See Appendix D to this letter.

Appendix B

Addendum Ecological Assessment of Controlled Action Species and Communities and MNES

B.1 Site Description

The Project seeks to facilitate the development of the Oakdale West precinct into a regional warehousing and distribution hub. Oakdale west represents the third stage of development within the broader Oakdale Estate. The Project constitutes a State Significant Development (SSD) under the NSW EP&A Act and is being assessed as a staged development under Division 2A of the EP&A Act.

The SSD application submitted to the NSW Department of Planning comprises the main warehouse hub of the Oakdale West development, located on land owned by Goodman and the North-South link Road which passes through areas that are the property of other landowners, including Fitzpatrick Investments Pty Ltd. As the Fitzpatrick land has previously been assessed for ecological impacts and has received approval for development subject to the creation of a conservation zone, the components of the North-South Link Road within Fitzpatrick land were not included within the ecological documentation prepared under the FBA.

The areas subject to the FBA are referred to as the 'development site'. The location of the development site and adjacent North-South Link Road are provided in **Figure 1** of **Appendix C** to this letter.

B.2 Impact Assessment on Matters of National Environmental Significance

This appendix provides an assessment of the impacts of the Oakdale West SSD on Matters of National Environmental Significance (MNES), in particular threatened species and communities as listed under the EPBC Act. This assessment considers the following:

- Threatened species and communities recorded within the development site;
- Threatened species and communities considered to have the potential to occur; and
- Threatened species and communities listed in the DoEE Supplementary Assessment Requirements.

B.2.1 Assessment of Controlled Action Species and Communities

The DoEE determined that the Oakdale West SSD constitutes a controlled action on 31 August 2017 due to the likelihood of significant impact on the following EPBC Act listed threatened species and communities :

- Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest – Critically Endangered;
- Regent Honeyeater (*Anthochaera phrygia*) – Critically Endangered;
- Swift Parrot (*Lathamus discolor*) – Critically Endangered;

- Green and Golden Bell Frog (*Litoria aurea*) – Vulnerable; and
- Prickly Bush-pea (*Pultenaea parviflora*) – Vulnerable.

A discussion of the potential impacts of the proposed development on these species and community is presented below, as well as Assessments of Significance according to the EPBC Act significant impact criteria.

According to the Significant Impact Guidelines (DOE, 2013) the concept of an 'important population' is central to assessing the potential for an action to have a significant impact on a Vulnerable species. According to the guidelines…*'an important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are*:

- *key source populations either for breeding or dispersal*
- *populations that are necessary for maintaining genetic diversity, and/or*
- *populations that are near the limit of the species range.*

An assessment of whether each of the species listed as Vulnerable constitutes an "important population" is provided for each relevant species, followed by the Assessment of Significance. Assessments of Significance have been conducted for all species listed as Critically Endangered/Endangered.

For the purposes of the threatened species assessments, vegetation communities that the species are known to be associated with have largely been utilised to describe suitable habitat for each individual species, as vegetation communities are generally associated with the geological and hydrological features that constitute habitat for the threatened species.

Residual impacts, after the proposed activities to avoid and mitigate all impacts are taken into account are generally confined to the removal of native vegetation which has been assessed for each individual MNES

Overall, the assessments determined that significant impacts are limited to the Critically Endangered Ecological Community (CEEC) Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (CPW).

While there is some potential for further unknown and unpredictable impacts to occur from edge effects or changes in hydrology associated with draining of dams, the impacts will not have any significant effect on any of the threatened species due to the paucity/lack of habitat present and extremely low likelihood of the species occurring within the development site.

i. Cumberland Plain Shale Woodland and Shale-Gravel Transition Forest

Cumberland Plain Shale Woodland and Shale-Gravel Transition Forest is listed as Critically Endangered under the EPBC Act. This community is limited to the Sydney Basin Bioregion with most occurrences in the Cumberland Sub-region.

This community typically occurs on flat to undulating or hilly terrain, at elevations up to approximately 350 metres above sea-level. Some occurrences may extend onto locally steep sites at slightly higher elevations. Most occurrences are on clay soils derived from Wianamatta Group geology, with limited to rare occurrences on other soil types (DoEE, 2017b).

Under NSW legislation, this community is represented by two separate threatened ecological communities: Cumberland Plain Woodland in the Sydney Basin Bioregion (listed as Critically Endangered) and Shale Gravel Transition Forest in the Sydney Basin Bioregion (listed as Endangered) (NSW Scientific Committee, 2002; NSW Scientific Committee, 2009).

Vegetation within the development site conforms to Cumberland Plain Woodland as defined under NSW legislation. No Shale Gravel Transition Forest (as defined under NSW legislation) has been mapped within the development site. Therefore the Shale-Gravel Transition Forest components of the EPBC listed community are not present within the development site.

Cumberland Plain Woodland within the site is further divided into two variants or Plant Community Types (PCTs) under the FBA assessment: HN528 and HN529. The FBA assessment has determined that there are significant residual impacts upon these two PCTs after all avoidance and mitigation measures are considered. An assessment against DoEE's Significant Impact guidelines has not been conducted for the Critically Endangered Ecological Community (CEEC) Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (CPW) as this ecological community was considered as significantly impacted in the ecological documentation prepared in accordance with the FBA.

As outlined in Section 4.5.2 of the BAR, only some parts of the HN528 and HN529 PCTs conform to CPW as defined under the EPBC Act (DEWHA, 2010). Based on the FBA assessments, the direct impacts on CPW (in the form of HN528 and HN529) are known and irreversible. As all CPW within the development site is to be removed (**Figure 2** of **Appendix C**), no indirect impacts will occur.

The residual impacts are to be compensated by the establishment of an offset site adjacent to the development site. The FBA assessments have determined that the 'like-for-like' credits generated at the offset site fully meet the credit requirement for the removal of HN528 and HN529.

As details of the impact assessment and offset strategy are provided in the ecological documentation prepared in accordance with the FBA, they are not discussed further within this supplementary assessment.

ii. Regent Honeyeater (Anthochaera phrygia)

The Regent Honeyeater is listed as Critically Endangered under the EPBC Act. This species is nomadic or partly migratory and has a patchy distribution between south-east Queensland and central Victoria. It primarily occurs in box-ironbark woodland, but also occurs in other forest types. The species primarily feeds on nectar and, to a lesser extent, insects and their exudates (lerps and honeydew). It mainly feeds on nectar from eucalypts and mistletoes and it prefers taller and larger diameter trees for foraging (DoEE, 2017a).

There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands (OEH, 2017c).

NSW OEH lists the Regent Honeyeater as being associated with the following vegetation communities within the Cumberland sub-region:

- Broad-leaved Ironbark - Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion
- Broad-leaved Ironbark - Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion

These communities are not present within the development site although they are known to occur in the wider locality. Nonetheless, the existing vegetation within the development footprint may provide some opportunistic foraging habitat for this species given its nomadic nature. However the vegetation mainly consists of fragmented patches of relatively young regrowth vegetation in a highly modified landscape and is considered to be marginal habitat for the Regent Honeyeater. Diurnal bird surveys conducted for the project (see Section 5.2.3 of the BAR) did not observe any indication of Regent Honeyeaters passing through the site. Although there is one record of this species within 10km of the subject site, this record appears to be from the 1930s and there have been no records in the vicinity of the development site within the last 20 years.

The proposed offset strategy will result in the establishment of a Biobank site adjacent to the development site. The vegetation within the Biobank site will be conserved in perpetuity and will be subject to management that will improve habitat conditions in the long-term. Therefore potential foraging habitat for the Regent Honeyeater will be maintained and conserved within the Biobank site.

The long-term viability of the species is not considered at risk as a result of the Project.

Significant Impact Criteria

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

Lead to a long-term decrease in the size of a population

The Regent Honeyeater has not been recorded within the development site and habitat within the site is limited to marginal foraging habitat only. This species is not known to breed in the locality however and therefore no breeding habitat is present.

The Project will remove a small area of potential, albeit marginal, foraging habitat for this species; however this habitat is located adjacent to cleared areas and is not of high quality. This species flies large distances in search of food and is not likely to be dependent on the habitat in the areas within the development footprint that will be cleared. Larger areas of similar habitat occur in locality, parts of which will be conserved and maintained in a Biobank site adjacent to the development site. For these reasons, no long term decrease in the size of a population of the Regent Honeyeater is considered likely to occur.

Reduce the area of occupancy of the species

The Project will remove small areas of potential albeit marginal, foraging habitat for the Regent Honeyeater; however larger areas of similar or more suitable habitat occur in locality, parts of which will be conserved and maintained in a Biobank site adjacent to the development site. The loss of small, degraded areas of habitat is not expected to reduce the overall area of occupancy of the Regent Honeyeater in the locality.

Fragment an existing population into two or more populations

The Regent Honeyeater is a highly mobile species that forages over large areas and it is unlikely the Project will fragment an existing population into two or more populations. The areas of habitat to be removed are relatively small and are located adjacent to cleared areas. Connectivity between patches of native bushland will be improved by the establishment of the adjacent Biobank site and no fragmentation of habitat for this species is considered likely to occur.

Adversely affect habitat critical to the survival of a species

Habitat for the Regent Honeyeater within the development site is limited to marginal foraging habitat and is not considered critical to the survival of this species. The small areas of habitat that will be removed are relatively degraded and are not critical to the survival of the Regent Honeyeater. Furthermore the establish of the adjacent Biobank site will improve habitat conditions for this species compared to current conditions in the long-term.

Disrupt the breeding cycle of a population

The Regent Honeyeater breeds in several key locations, none of which occur in the locality of the development site. Accordingly, it is not considered likely that the Project will disrupt the breeding cycle of a population of this species.

Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

A small area of marginal foraging habitat for the Regent Honeyeater will be removed as part of the Project. However, large areas of similar habitat will remain in the locality that may be used

by this species. Furthermore the establishment of the adjacent Biobank site will improve habitat conditions for this species compared to current conditions in the long-term. The Regent Honeyeater is highly mobile and makes use of resources from across a very large area. Therefore the removal of this area of habitat is not expected to result in the decline of this species.

> *Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat*

Environmental Management Plans for the development site and the adjacent Biobank site will be prepared for the Project that contains detailed specifications for the control of invasive species, including both exotic plants and feral animals.

With the implementation of the control measures outlined in the management plans, it is considered unlikely that any invasive species will become established in areas of potential habitat for the Regent Honeyeater.

> *Introduce disease that may cause the species to decline, or*

The Project is considered unlikely to introduce disease that may cause the Regent Honeyeater to decline.

> *Interfere with the recovery of the species*

A small area of marginal foraging habitat for the Regent Honeyeater will be removed as part of the Project. However, this is not breeding habitat, and large areas of similar habitat will remain in the locality that may be used by this species. The Regent Honeyeater is highly mobile and makes use of resources from across a very large area. Therefore the removal of this area of habitat is not expected to interfere with the recovery of this species.

Conclusion

No significant impact is predicted to occur to the Regent Honeyeater as a result of the Project.

iii. Swift Parrot (Lathamus discolor)

The Swift Parrot is listed as Critically Endangered under the EPBC Act. During summer, it breeds in colonies in blue gum forest of south-east Tasmania. Infrequent breeding also occurs in north-west Tasmania. Breeding occurs in tree hollows and they have high site fidelity. The entire population migrates to the mainland for winter. On the mainland it disperses widely and forages on flowers and psyllid lerps in eucalypts. The birds mostly occur on inland slopes, but occasionally occur on the coast (DoEE, 2017c)

In NSW mostly occurs on the coast and south west slopes (OEH, 2017d). NSW OEH lists the Swift Parrot as being associated with the following vegetation communities within the Cumberland sub-region:

- Broad-leaved Ironbark - Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion
- Broad-leaved Ironbark - Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion

These communities are not present within the development site although they are known to occur in the wider locality. Nonetheless, the existing vegetation within the development footprint may provide some opportunistic foraging habitat for this species given its nomadic nature. However the vegetation mainly consists of fragmented patches of relatively young regrowth vegetation in a highly modified landscape and is considered to be marginal habitat for the Swift Parrot. Diurnal bird surveys conducted for the project, while not specifically targeting this species, (see Section 5.2.3 of the BAR) did not observe any indication of Swift Parrot passing through the site). The one record of this species within 10km of the subject site occurred in 2007.

The proposed offset strategy will result in the establishment of a Biobank site adjacent to the development site. The vegetation within the Biobank site will be conserved in perpetuity and will be subject to management that will improve habitat conditions in the long-term. Therefore potential foraging habitat for the Regent Honeyeater will be maintained and conserved within the Biobank site.

The long-term viability of the species is not considered at risk as a result of the Project.

Significant Impact Criteria

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

Lead to a long-term decrease in the size of a population

The Swift Parrot has not been recorded within the development site and habitat within the site is limited to marginal foraging habitat only. This species is not known to breed in the locality however and therefore no breeding habitat is present.

The Project will remove a small area of potential, albeit marginal, foraging habitat for this species; however this habitat is located adjacent to cleared areas and is not of high quality. This species flies large distances in search of food and is not likely to be dependent on the habitat in the areas within the development footprint that will be cleared. Larger areas of similar habitat occur in locality, parts of which will be conserved and maintained in a Biobank site adjacent to the development site. For these reasons, no long term decrease in the size of a population of the Swift Parrot is considered likely to occur.

Reduce the area of occupancy of the species

The Project will remove small areas of potential albeit marginal, foraging habitat for the Swift Parrot; however larger areas of similar or more suitable habitat occur in locality, parts of which will be conserved and maintained in a Biobank site adjacent to the development site. The loss

of small, degraded areas of habitat is not expected to reduce the overall area of occupancy of the Swift Parrot in the locality.

Fragment an existing population into two or more populations

The Swift Parrot is a highly mobile species that forages over large areas and it is unlikely the Project will fragment an existing population into two or more populations. The areas of habitat to be removed are relatively small and are located adjacent to cleared areas. Connectivity between patches of native bushland will be improved by the establishment of the adjacent Biobank site and no fragmentation of habitat for this species is considered likely to occur.

Adversely affect habitat critical to the survival of a species

Habitat for the Swift Parrot within the development site is limited to marginal foraging habitat and is not considered critical to the survival of this species. The small areas of habitat that will be removed are relatively degraded and are not critical to the survival of the Swift Parrot. Furthermore the establish of the adjacent Biobank site will improve habitat conditions for this species compared to current conditions in the long-term.

Disrupt the breeding cycle of a population

The Swift Parrot breeds in several key locations, none of which is in the locality of the development site. Accordingly, it is not considered likely that the Project will disrupt the breeding cycle of a population of this species.

Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

A small area of marginal foraging habitat for the Swift Parrot will be removed as part of the Project. However, large areas of similar habitat will remain in the locality that may be used by this species. Furthermore the establishment of the adjacent Biobank site will improve habitat conditions for this species compared to current conditions in the long-term. The Swift Parrot is highly mobile and makes use of resources from across a very large area. Therefore the removal of this area of habitat is not expected to result in the decline of this species.

Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat

Environmental Management Plans for the development site and the adjacent Biobank site will be prepared for the Project that contains detailed specifications for the control of invasive species, including both exotic plants and feral animals.

With the implementation of the control measures outlined in the management plans, it is considered unlikely that any invasive species will become established in areas of potential habitat for the Swift Parrot.

Introduce disease that may cause the species to decline, or

The Project is considered unlikely to introduce disease that may cause the Swift Parrot to decline.

Interfere with the recovery of the species

A small area of marginal foraging habitat for the Swift Parrot will be removed as part of the Project. However, this is not breeding habitat, and large areas of similar habitat will remain in the locality that may be used by this species. The Swift Parrot is highly mobile and makes use of resources from across a very large area. Therefore the removal of this area of habitat is not expected to interfere with the recovery of this species.

Conclusion

No significant impact is predicted to occur to the Swift Parrot as a result of the Project.

Green and Golden Bell Frog (Litoria aurea)

The Green and Golden Bell Frog (*Litoria aurea*) is listed as Vulnerable under the EPBC Act. The Green and Golden Bell Frog occurs mainly along coastal lowland areas of eastern NSW and Victoria. The most northern extent of the species distribution is from Yuraygir National Park (NP) near Grafton on the North Coast of NSW while the most southern extent of the species' distribution is in the vicinity of Lake Wellington, just west of Lakes Entrance in south-eastern Victoria. The furthest inland record of the species is at a recently discovered population near Hoskinstown in the Southern Tablelands (referred to as the Molongolo population). The species was previously known from elsewhere in the Southern Tablelands, but is now considered to have disappeared from the ACT and central slopes around Bathurst (DoEE, 2017d).

Since 1990 there have been approximately 50 recorded locations in NSW, most of which are small, coastal, or near coastal populations. These locations occur over the species' former range, however they are widely separated and isolated. Large populations in NSW are located around the metropolitan areas of Sydney, Shoalhaven and mid north coast (one an island population). There is only one known population on the NSW Southern Tablelands (OEH, 2017a)

In NSW, the Green and Golden Bell Frog has been found in a wide range of water bodies except fast flowing streams. It inhabits many disturbed sites, including abandoned mines and quarries. Breeding habitat includes water bodies that are still, shallow, ephemeral, unpolluted (but the frog can be found in polluted habitats), unshaded, with aquatic plants and free of Mosquito Fish (*Gambusia holbrooki*) and other predatory fish, with terrestrial habitats that consisted of grassy areas and vegetation no higher than woodlands, and a range of diurnal shelter sites . Breeding occurred in a significantly higher proportion of sites with ephemeral (temporary) ponds, rather than sites with fluctuating or permanent ponds, and where predatory fish were absent (OEH, 2017a).

Habitat within the development site is limited to two large dams which contain varying levels of fringing vegetation. Targeted surveys for this species (see Section 5.2.3 of the BAR) did not detect this species although other common frog species were recorded. Visual observations determined the presence of *Gambusia holbrooki* within the dams, indicating that they are

unlikely to be suitable breeding habitat for this species. Riparian habitats along the adjacent Ropes Creek may also provide some sheltering habitat for this species. However as Gambusia holbrooki is known to occur within Ropes Creek, the riparian areas are unlikely to constitute suitable breeding habitat for this species.

The long-term viability of the species is not considered at risk as a result of the Project.

Assessment of "Important Population" status

Key source population either for breeding or dispersal

No Green and Golden Bell Frogs were recorded in the development site or adjacent parts of Ropes Creek. Therefore the areas is not considered to be part of a key source population for breeding or dispersal. Although there are records of this species within 10km of the subject site, they appear to be from the 1960-1970s and there have been no records in the vicinity of the development site within the last 20 years, despite the area being subject to many biodiversity assessments.

Populations that are necessary for maintaining genetic diversity

No individuals have been recorded within the development site or adjacent parts of Ropes Creek. As any potential occurrence of this species would be connected to other populations in the locality via Ropes Creek (a 3rd order stream), it is unlikely that any potential Green and Golden Bell Frogs in the development site are genetically distinct. It is therefore not considered that they belong to a population that is necessary for maintaining genetic diversity.

Populations that are near the limit of the species range

The Study Area is not located near the limit of the range of the Green and Golden Bell Frog. It occurs along the entire coast of NSW and northern Victoria and the Study Area is in the middle of its range.

For the reasons outlined above, the individuals of the Green and Golden Bell Frog that occurs in the Study Area are not part of a population that is considered to be important for the long term survival and recovery of this species and are not considered to comprise an 'important population' as defined by the EPBC Act.

Significant Impact Criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

Lead to a long-term decrease in the size of an important population of a species

No Green and Golden Bell Frogs have been recorded in the development site. Any potential population of the Green and Golden Bell Frog that utilises the development site is not considered to be an important population.

Habitat in the form of two farm dams will be removed. However the habitat potential of the dams is considered to be limited due to the confirmed presence of *Gambusia holbrooki*. Further potential habitat in riparian areas along Ropes Creek will be retained and conserved within a Biobank site. For these reasons, no long term decrease in the size of an important population of the Green and Golden Bell Frog is considered likely to occur.

Reduce the area of occupancy of an important population

Habitat in the form of two farm dams will be removed. However the habitat potential of the dams is considered to be limited due to the confirmed presence of Gambusia holbrooki. Further potential habitat in riparian areas along Ropes Creek will be retained and conserved within a Biobank site. and the Project is not expected to reduce the potential area of occupancy of this species in the Study Area and the locality.

Fragment an existing important population into two or more populations

It is unlikely that the Project will fragment an existing population of the Green and Golden Bell Frog into two or more populations. No known habitat will be removed, and connectivity will remain via Ropes Creek. No fragmentation is considered likely to occur.

Adversely affect habitat critical to the survival of a species

No suitable habitat critical for the survival of the Green and Golden Bell Frog occurs in the development site.

Disrupt the breeding cycle of an important population

The Project is not considered likely to disrupt the breeding cycle of a population of the Green and Golden Bell Frog. No individuals have been recorded and potential breeding habitat within the dams and Ropes Creek is highly limited due to confirmed presence of Gambusia holbrooki. Furthermore, the potential population in the development site and surrounds is not considered to be an important population.

Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

Habitat in the form of two farm dams will be removed. However the habitat potential of the dams is considered to be limited due to the confirmed presence of *Gambusia holbrooki*. Further potential habitat in riparian areas along Ropes Creek will be retained and conserved within a Biobank site. Therefore the Project is not expected to result in the decline of this species.

Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat

Management plans will be prepared for the development site and Biobank site that contains detailed specifications for the control of invasive species, including both exotic plants and feral animals. The introduced *Gambusia holbrooki* is known to be a threat to this species, however

this species is already confirmed in the area and it is unlikely that the Project will result in the introduction of this species into the Study Area.

With the implementation of the control measures outlined in the management plans, it is considered unlikely that any invasive species will become established in areas of potential habitat for the Green and Golden Bell Frog.

Introduce disease that may cause the species to decline, or

The Project is considered unlikely to introduce disease that may cause the Green and Golden Bell Frog to decline. Chytrid fungus is a known threatening process for native frogs; however it is unlikely that the Project will result in the introduction of this disease. Appropriate hygiene protocols will be implemented when work is undertaken in wet and swampy areas that may harbour populations of frog infected with this fungus.

Interfere substantially with the recovery of the species

No confirmed/known habitat for the Green and Golden Bell Frog will be removed as part of the Project. Large areas of similar habitat will remain in the locality that may be used by this species. No breeding habitat of this species will be removed and the Project is not expected to interfere with the recovery of this species.

Conclusion

No significant impact is predicted to occur to the Green and Golden Bell Frog as a result of the Project.

iv. Pultenaea parviflora (Prickly Bush-pea)

Pultenaea parviflora is listed as Vulnerable under the EPBC Act. This species is confined to the Cumberland Plain, west of Sydney on the Central Coast, NSW. Within this area the species is mainly found between Penrith and Windsor. The species may be locally abundant in areas where it occurs, particularly within scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays, and in transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland (DoEE, 2017e).

Eucalyptus fibrosa is usually the dominant canopy species. *Eucalyptus globoidea, E. longifolia, E. parramattensis, E. sclerophylla* and *E. sideroxylon* may also be present or co-dominant, with *Melaleuca decora* frequently forming a secondary canopy layer. This species is often found in association with other NSW listed threatened species such as *Dillwynia tenuifolia, Grevillea juniperina, Micromyrtus minutiflora* and *Persoonia nutans* (OEH, 2017b).

NSW OEH lists *Pultenaea parviflora* as being associated with the following vegetation communities within the Cumberland Plain:

- Broad-leaved Ironbark - Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion;

- Broad-leaved Ironbark - Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion;
- Derived shrubland on Tertiary Gravels of the Cumberland Plain;
- Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin Bioregion;
- Derived grasslands on shale hills of the Cumberland Plain (50-300m asl); and
- Derived grasslands on shale plains of the Cumberland Plain (<100m asl).

The vegetation mapping for the development site has determined that these specific vegetation communities are not present within the development site. Although the development site is present on shale hills and shale plain areas of the Cumberland Plain, the grassland areas largely comprise exotic pasture grasslands, derived native grasslands are absent from the development site.

As previously described in section B,2.1 (i), the vegetation within the development site comprises the Cumberland Plain Shale Woodland component of the EPBC listed community Cumberland Plain Shale Woodland and Shale-Gravel Transition Forest only. The Shale-Gravel Transition Forest component of the EPBC listed community, which comprises habitat for this species, is not present on the development site. Other communities which also comprise habitat for this species such as Castlereagh Ironbark Forest or Castlereagh Scribbly Gum Woodland are also absent from the development site.

Furthermore targeted flora surveys did not record any occurrences of this species, despite presence of other associated threatened species (NSW listing) such as *Grevillea juniperina* subsp. *juniperina*.

Pultenaea parviflora is therefore considered unlikely to occur within the development site and the long-term viability of the species is not considered at risk as a result of the Project. Nonetheless a conservative approach has been taken and this species has been assessed against the Significant Impact Guidelines.

Assessment of "Important Population" status

Key source population either for breeding or dispersal

No individuals of *Pultenaea parviflora* were recorded in the development site or adjacent areas despite the presence of associated species such as *Grevillea juniperina* subsp *juniperina*. Therefore the area is not considered to be part of a key source population for breeding or dispersal.

Populations that are necessary for maintaining genetic diversity

No individuals have been recorded within the development site or adjacent areas despite the presence of associated species such as *Grevillea juniperina* subsp. *juniperina*. Therefore a

population that is necessary for maintaining genetic diversity is not considered to occur within the development site.

Populations that are near the limit of the species range

The NSW OEH profile for this species states that the 'Core distribution is from Windsor to Penrith and east to Dean Park. Outlier populations are recorded from Kemps Creek and Wilberforce'. The development site is within Erskine Park which is located between Penrith and Kemps Creek. Therefore the development site is not located near the limit of the species' known range.

For the reasons outlined above, the any potential individuals that may occur in the development site are not considered to be part of a population that is important for the long term survival and recovery of this species and are not considered to comprise an 'important population' as defined by the EPBC Act.

Significant Impact Criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

Lead to a long-term decrease in the size of an important population of a species

No *Pultenaea parviflora* individuals have been recorded in the development site. Any potential population of *Pultenaea parviflora* individuals that may occur within the development site are not considered to be part of an important population.

Vegetation to be removed from the development site is considered to be marginal potential habitat for this species. Further potential marginal habitat will be retained and conserved within a Biobank site. For these reasons, no long term decrease in the size of an important population of *Pultenaea parviflora* is considered likely to occur.

Reduce the area of occupancy of an important population

No known habitat for this species will be removed. Vegetation to be removed from the development site is considered to be marginal potential habitat for this species. Further potential, albeit marginal, habitat will be retained and conserved within a Biobank site. Therefore the Project is not expected to reduce the potential area of occupancy of this species in the locality.

Fragment an existing important population into two or more populations

It is unlikely that the Project will fragment an existing population of *Pultenaea parviflora* into two or more populations. No individuals have been recorded in the development site and no known habitat will be removed. Although some potential, marginal habitat will be removed, areas of marginal habitat will be retained and conserved in the Biobank site and connectivity will remain via Ropes Creek. No fragmentation is considered likely to occur.

Adversely affect habitat critical to the survival of a species

No suitable habitat critical for the survival of *Pultenaea parviflora* occurs in the development site.

Disrupt the breeding cycle of an important population

The Project is not considered likely to disrupt the breeding cycle of an important population of *Pultenaea parviflora*. No individuals have been recorded and any potentially occurring individuals in the development site is not considered to be part of an important population.

Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

No known habitat for this species will be removed. Vegetation to be removed from the development site is considered to be marginal potential habitat for this species. Further potential, albeit marginal, habitat will be retained and conserved within a Biobank site. Therefore the Project is not expected to result in the decline of this species.

Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat

Management plans will be prepared for the development site and Biobank site that contains detailed specifications for the control of invasive species, including both exotic plants and feral animals. With the implementation of the control measures outlined in the management plans, it is considered unlikely that any invasive species will become established in areas of potential habitat for *Pultenaea parviflora*.

Introduce disease that may cause the species to decline, or

The Project is considered unlikely to introduce disease that may cause *Pultenaea parviflora* to decline. Appropriate avoidance and mitigation measures will be implemented to avoid transferring the soil borne pathogenic fungus *Phytopthera cinnamomi* or Exotic Rust Fungi of the order Pucciniales into the area.

Interfere substantially with the recovery of the species

No confirmed/known habitat for *Pultenaea parviflora* will be removed as part of the Project. Large areas of similar habitat will remain in the locality that may support this species and the Project is not expected to interfere with the recovery of this species.

Conclusion

No significant impact is predicted to occur to *Pultenaea parviflora* as a result of the Project.

B.2.2 Likelihood of Occurrence Assessment

During the assessment process under the NSW Framework for Biodiversity Assessment (FBA) as required for Major Projects, lists of 'Predicted Threatened Species' and 'Species Credit Species' were generated by the Biobanking calculator based on data entered into the calculator

(including landscape values for a 1000ha outer assessment circle). These lists are deemed more accurate at determining potential threatened species requiring further assessment as the potential for occurrence is based on both habitat value data and existing records.

As the action is to be assessed in accordance with the NSW Assessment Bilateral Agreement 2015, the subset of EPBC listed species within these lists was utilised to conduct a likelihood of occurrence assessment for EPBC listed threatened species. The likelihood of occurrence of these species is provided in **Table B1** below.

The majority of these species are considered unlikely to occur within the development site and therefore are not subject to further assessment.

Table 2 Likelihood of occurrence of EPBC Act listed Threatened Flora and Fauna species

Scientific name	Common name	Status	Required Habitat Components	Assessment of Habitat Within the Development Site
Flora				
Acacia bynoeana	Bynoe's Wattle	Vulnerable	Occurs in heath or dry sclerophyll forest on sandy soils. Associated overstorey species include Red Bloodwood, Scribbly Gum, Parramatta Red Gum, Saw Banksia and Narrow-leaved Apple.	Unlikely to occur. No sandy soil and/or associated overstorey species present. No records of the species within a 10 km radius of the development site.
Acacia pubescens	Downy Wattle	Vulnerable	Occurs on alluviums, shales and at the intergrade between shales and sandstones. The soils are characteristically gravely soils, often with ironstone. Occurs in open woodland and forest, in a variety of plant communities, including Cooks River/ Castlereagh Ironbark Forest, Shale/ Gravel Transition Forest and Cumberland Plain Woodland.	Limited potential to occur. Cumberland Plain Woodland is present within the development site. 7 records of the species within a 10 km radius of the development site. However no individuals recorded during surveys
Cynanchum elegans	White-flowered Wax Plant	Endangered	Usually occurs on the edge of dry rainforest vegetation. Other associated vegetation types include littoral rainforest; Coastal Tea-tree–Coastal Banksia coastal scrub; Forest Red Gum aligned open forest and woodland; Spotted Gum aligned open forest and woodland; and Bracelet Honeymyrtle scrub to open scrub.	Unlikely to occur. Woodland containing Forest Red Gum present within the development site mainly occurs in a degraded form with weedy understorey. No records of the species within a 10 km radius of the development site.
Eucalyptus	Camden White Gum	Vulnerable	Occurs on the alluvial flats of the Nepean River	Limited potential to occur. Eucalyptus

Table 2 Likelihood of occurrence of EPBC Act listed Threatened Flora and Fauna species

Scientific name	Common name	Status	Required Habitat Components	Assessment of Habitat Within the Development Site
benthamii			and its tributaries. Requires a combination of deep alluvial sands and a flooding regime that permits seedling establishment. Associated canopy species include Eucalyptus elata, E. bauerina, E. amplifolia, E. deanei, Angophora subvelutina, E. crebra, E. deanei, E. punctata.	amplifolia present within Referral Area. No records of the species within a 10 km radius of the development site. However no individuals recorded during surveys
Hibbertia sp. Bankstown	Hibbertia sp. Bankstown	Endangered	Remnant vegetation at the known location (Bankstown Airport) and soil type (silty sandy alluvium) are consistent with an inferred pre-settlement cover of Castlereagh Ironbark Forest although some remnant vegetation at and near the site (along the channel in particular) suggests Castlereagh Scribbly Gum equally valid.	Unlikely to occur. Neither Castlereagh Scribbly Gum Forest nor Castlereagh Ironbark Forest are present on the site. No records of the species within a 10 km radius of the development site.
Hypsela sessiliflora	Hypsela sessiliflora	Extinct	Damp places	Unlikely to occur. Damp areas are present within Referral Area. No recent records of the species within a 10 km radius of the development site.
Melaleuca biconvexa	Biconvex Paperbark	Vulnerable	Swamps, swamp margins or creek edges. Generally grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects.	Unlikely to occur. Suitable habitat in sheltered areas of riparian vegetation besides creek lines. However species is not known to occur in the Sydney Region. No records of the species within a 10 km radius of the development site.

Table 2 Likelihood of occurrence of EPBC Act listed Threatened Flora and Fauna species

Scientific name	Common name	Status	Required Habitat Components	Assessment of Habitat Within the Development Site
Persicaria elatior	Tall Knotweed	Vulnerable	Grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.	Limited potential to occur as damp places in creek lines are present. However no records of the species within a 10 km radius of the development site and no individuals recorded during surveys
Persoonia bargoensis	Bargo Geebung	Vulnerable	Occurs in woodland or dry sclerophyll forest on sandstone and on heavier, well drained, loamy, gravelly soils of the Wianamatta Shale and .Hawkesbury Sandstone.	Limited potential to occur. Dry Sclerophyll Forest on Wianamatta Shale derived soils is present on the site. However no records of the species within a 10 km radius of the development site and no individuals recorded during surveys.
Pimelea curviflora var. curviflora	Pimelea curviflora var. curviflora	Vulnerable	Occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands.	Unlikely to occur. Lateritic soils are not present, nor are transitional areas between shale and sandstone. No records of the species within a 10 km radius of the development site.
Pimelea spicata	Spiked Rice-flower	Endangered	On the Cumberland Plain sites it is associated with Grey Box communities (particularly Cumberland Plain Woodland variants and Moist Shale Woodland) and in areas of ironbark.	Potential to occur as a grey box community is present on the site. 13 records of the species within a 10 km radius of the development site. However no individuals recorded during targeted flora surveys.
Pomaderris brunnea	Brown Pomaderris	Vulnerable	Grows in moist woodland or forest on clay and alluvial soils of flood plains and creek lines.	Limited potential to occur. Moist woodland associated with shale derived clay and

Table 2 Likelihood of occurrence of EPBC Act listed Threatened Flora and Fauna species

Scientific name	Common name	Status	Required Habitat Components	Assessment of Habitat Within the Development Site
				alluvial soils are present along creek lines. However no records of the species within a 10 km radius of the development site and no individuals recorded during surveys.
Pterostylis saxicola	Sydney Plains Greenhood	Endangered	Typically in shallow /skeletal soils on rock shelves and platforms. The vegetation communities above the shelves where Pterostylis saxicola occurs are sclerophyll forest or woodland on shale/sandstone transition soils or shale soils.	Unlikely to occur. Site does not contain rock platforms, or associated skeletal soils. No records of the species within a 10 km radius of the development site.
Fauna				
Anthochaera phrygia	Regent Honeyeater	Critically Endangered	The Regent Honeyeater is a generalist forager, which mainly feeds on the nectar from a wide range of eucalypts and mistletoes. Key eucalypt species include Mugga Ironbark, Yellow Box, Blakely's Red Gum, White Box and Swamp Mahogany. Also utilises: Eucalyptus microcarpa, E. punctata, E. polyanthemos, E. moluccana, Corymbia robusta, E. crebra, E. caleyi, C. maculata, E. mckieana, E. macrorhyncha, E. laevopinea, and Angophora floribunda. Nectar and fruit from the mistletoes Amyema miquelii, A. pendula and A. cambagei are also eaten during the breeding season.	Some potential to pass through the site. Occurrences of Eucalyptus crebra and E. moluccana may provide limited opportunistic foraging habitat for this species. Breeding and roosting habitat absent.

Table 2 Likelihood of occurrence of EPBC Act listed Threatened Flora and Fauna species

Scientific name	Common name	Status	Required Habitat Components	Assessment of Habitat Within the Development Site
Botaurus poiciloptilus	Australasian Bittern	Endangered	Occurs in terrestrial freshwater wetlands and, rarely, estuarine habitats. It favours wetlands with tall, dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water. The species favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and/or reeds (e.g. Phragmites, Cyperus, Eleocharis, Juncus, Typha, Baumea, Bolboschoenus) or cutting grass (Gahnia) growing over muddy or peaty substrate	Unlikely to occur. No densely vegetated wetlands occur within the development site. No records of the species within a 10 km radius of the development site.
Dasyurus maculatus	Spotted-tailed Quoll	Endangered	Inhabits a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Use hollow-bearing trees, logs, caves, crevices and rocky cliff-faces as den sites.	Unlikely to occur. Woodland vegetation is present but lacks the microhabitat features required to support this species. No records within 10km radius of the site
Grantiella picta	Painted Honeyeater	Vulnerable	Inhabits Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. Specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus Amyema.	Unlikely to occur – no suitable inhabited vegetation present, no foraging habitat present. No records of the species within a 10 km radius of the development site.

Table 2 Likelihood of occurrence of EPBC Act listed Threatened Flora and Fauna species

Scientific name	Common name	Status	Required Habitat Components	Assessment of Habitat Within the Development Site
Heleioporus australiacus	Giant Burrowing Frog	Vulnerable	Heath, woodland or forest, on most soils except not generally found where there is a grassy ground layer. Often forage along tracks and roads during warm evenings. Soaks or pools in 1st or 2nd order streams, ponded sections of unmarked drainage lines, culverts and other ridge top structures containing water, upland swamps. Deep leaf litter and/or loose soil, burrow structures that they construct.	Unlikely to occur. No first order streams occur within the development site and the dams on site are devoid of bank vegetation. Percent native vegetation within the outer assessment circle is below the requirement of this species. No records of the species within a 10 km radius of the development site.
Lathamus discolor	Swift Parrot	Critically Endangered	Inhabit open eucalypt forests and woodlands, including box–ironbark communities, and farmland with remnant patches of eucalypt woodland	Some potential to pass through the site during migration. Eucalypt woodland habitat may provide limited opportunistic foraging habitat for this species. Breeding and roosting habitat absent.
Litoria aurea	Green and Golden Bell Frog	Vulnerable	Amongst emergent aquatic or riparian vegetation and amongst vegetation, fallen timber adjacent to and within 500m of breeding habitat, including grassland, cropland and modified pastures. Still or slow flowing natural waterbodies with some aquatic emergent vegetation such as Typha spp. or Eleocharis spp. Will use artificial waterbodies and non native emergent vegetation. Vegetation, rocks and fallen timber, leaf litter, man made	Potential to occur. Five dams are present within the development site which have some ephemeral/emergent vegetation. Three records of the species within a 10 km radius of the development site. However no individuals were recorded during targeted surveys for this species

Table 2 Likelihood of occurrence of EPBC Act listed Threatened Flora and Fauna species

Scientific name	Common name	Status	Required Habitat Components	Assessment of Habitat Within the Development Site
			ground cover, debris and in soil cracks up to 1km from breeding habitat.	
Phascolarctos cinereus	Koala	Vulnerable	Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species.	Unlikely to occur. Although two primary feed trees occur within the development site (Eucalyptus tereticornis and E. amplifolia), much of the habitat present within the development site is significantly fragmented from any nearby connecting habitat. Potential habitat in the intact woodland on the western edge of the development site is juvenile, regenerating woodland not suitable for Koala. No indications (eg scratches, scats) of habitation and no records of the species within a 10 km radius of the development site.
Rostratula australis	Australian Painted Snipe	Endangered	Inhabits fringes of shallow inland wetlands, swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	Unlikely to occur. No densely vegetated wetlands occur within the development site. No records of the species within a 10 km radius of the development site.

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Appendix C

Figures

Coordinate System: MGA Zone 56 (GDA 94)

Legend

- Development Site
- North South Link Road

Vegetation Community

- Shale Plains Woodland
- Shale Hills Woodland
- River-flat Eucalypt Forest
- Swamp Oak Forest
- Native Revegetation Area
- Exotic Vegetation
- Pipeline

N
Grid North

Image Source:
Nearmap (dated 11/02/2017)

cumberland ecology

I:\...\15122\Figures\Letter 6\20171027\Figure 1. Vegetation_Development Site

Figure 1. Vegetation Communities within the Development Site

100 0 100 200 300 400 m

Coordinate System: MGA Zone 56 (GDA 94)

Legend

Development Site

North South Link Road

MNES Vegetation

Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest

N

Grid North

Image Source:
Nearmap (dated 11/02/2017)

cumberland ecology

100 0 100 200 300 400 m

I:\...\15122\Figures\Letter 6\20171027\Figure 2. Impacted MNES_Development Site

Figure 2. Impacted MNES within the Development Site

Appendix D

Proponent: Environmental Record

Goodman Property Services (Aust) Pty Ltd is a real estate agency specialising in commercial property that owns, develops and manages high quality industrial and business space across Australia. Despite this, it has had no environmental incidents and has a broad and system to reduce its impact on the environment.

Operational Environmental Management Plans have been prepared and approved by the Department of Planning and other relevant agencies for all major Goodman development projects. These management plans set the parameters for environmental protection and maintenance and include measures for water, noise, waste, landscape, air quality and energy efficiency maintenance. Goodman maintains reputable record of environmental management.

Goodman's Australian operations have systems and processes in place to manage key environmental risks across its operations. Key risks include aspects such as management of hazardous materials, protection of stormwater, management of fuel tanks, and protection of flora and fauna, particularly areas of environmental significance or conservation zones.

Identification and management of key risks is an important part Goodman's approach to environmental management. This includes management processes such as due diligence procedures for new acquisitions, development estate planning, risk assessments and hazardous material assessments.

Goodman maintains a database of relevant environmental reports for our Estates and Business Parks, which includes hazardous materials reports or site specific management plans. Goodman's Environmental Committee undertakes quarterly meetings to discuss the status of related projects, key risks, due diligence and remediation projects.

Goodman will implement an Operational Environment Management Plan to manage the following:

- Control of noise and air emissions;
- Biodiversity and vegetation management;
- Management of water and waste;
- Emergency procedures and protocols;
- Engagement with adjoining landowners;
- Sustainability and energy efficiency;
- Compliance and approvals; and
- Environmental management and reporting.